

**AMENDMENTS TO THE DRAWINGS:**

The attached sheets of drawings include changes to FIGS. 1-4.

Attachments:        Replacement Sheets -- Four -- FIGS. 1-4

## **REMARKS**

In reply to the objections (a)-(d) to the drawings on page 3 of the above Office Action, attached are four replacement sheets of FIGS, 1-4 that avoid these objections. The corrections set forth in PTO Form 948 will be made upon allowance of the claims.

In addition, claims 27-49 have been cancelled and replaced by new claims 50-69 to more specifically claim applicants' invention and distinguish it from the cited prior art. Reconsideration of the prior art rejections in light of the new claims and the following is requested. An RCE is being filed simultaneously with this Reply to enable the Examiner to consider the new claims at this time.

New main claim 50 relates to an automatic method for the production of SO<sub>2</sub> from the combustion of elemental sulfur and pure oxygen, comprising the steps of:

feeding liquid sulfur into an atomizer in a burner;  
atomizing the liquid sulfur in the burner together with return SO<sub>2</sub> and pure oxygen; and

producing oxidative combustion of the liquid sulfur and the pure oxygen in a combustion chamber to produce SO<sub>2</sub> in the presence of the return SO<sub>2</sub>, wherein the return SO<sub>2</sub> is used as a cooling and diluting agent for the reactants taking part in the oxidative combustion in the combustion chamber, oxygen not consumed during the oxidative combustion is returned to the combustion chamber together with the return SO<sub>2</sub> to be reused, and the temperature of the oxidative combustion of the liquid sulfur does not exceed 1250°C, wherein the temperature is controlled by automatically controlling a defined ratio of S, O<sub>2</sub> and SO<sub>2</sub>, by measuring and controlling with respective flow sensors the flow of return oxygen, the flow of return SO<sub>2</sub> and O<sub>2</sub>, the flow of the pure oxygen and the flow of the liquid sulfur to the chamber.

Claims 51-71 dependent therefrom correspond to former claims 28, 30-34, and 37-49 respectively, the subject matter of former claims 29 and 35-36 having been included in new main claim 50.

In the Office Action the Examiner rejected former claims 27-29, 39 and 41-45 under 35 U.S.C. §102(e) for being anticipated by Perez Garcia. In addition, claims 30-38, 40, and 46-49 were rejected under 35 U.S.C. §103(a) for being obvious over Perez Garcia.

As noted, new main claim 50 relates to an automatic method for the production of SO<sub>2</sub> wherein the temperature of the oxidative combustion of liquid sulfur in a combustion chamber is controlled by measuring and controlling the flow of the liquid sulfur, the flow of pure oxygen, the flow of the return oxygen and the flow of the return SO<sub>2</sub> and O<sub>2</sub> to the combustion chamber to automatically obtain a defined ratio of S, O<sub>2</sub> and SO<sub>2</sub>.

Perez Garcia also relates to a process for producing sulfur dioxide from sulfur and pure oxygen, but there is no disclosure of controlling the temperature of their combustion by automatically controlling a defined ratio of S, O<sub>2</sub> and SO<sub>2</sub> with flow sensors for the flows of sulfur, oxygen, return oxygen, and return SO<sub>2</sub> and oxygen to the chamber. The ratio of S : O<sub>2</sub> : SO<sub>2</sub> is what generates the temperature in the combustion chamber and controlling this temperature is a key factor in obtaining a more efficient production of SO<sub>2</sub>, maintaining safety and minimizing pollution. The combustion chamber can spontaneously rise to dangerous levels of 5000°C or more, so it is essential that the temperature be carefully controlled.

Perez Garcia does not describe a similar method for controlling the temperature with flow sensors that measure and control the ratio of the ingredients fed to the combustion chamber. Rather, it merely describes cooling recirculated combustive gas "to maintain combustion at less than 1200°C."

Accordingly, it is not believed that the invention set forth in claim 50 or claims 51-69 dependent therefrom can be considered anticipated by this reference. Its withdrawal as a ground of rejection under §102 is therefore requested.

Nor is it believed that any of claims 50-69 should be considered obvious over Perez Garcia either because there is no disclosure of controlling the combustion temperature by automatically controlling a defined ratio of S, O<sub>2</sub> and SO<sub>2</sub> fed to the chamber. Rather, as noted, temperature is merely controlled in Perez Garcia by cooling combustion gas that is returned to the chamber. Any suggestion that the temperature be controlled by maintaining a defined ratio of S, O<sub>2</sub> and SO<sub>2</sub> is hindsight based on a reading of applicants' specification.

It is believed claims 50-69 are in condition for allowance.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

Dated: November 23, 2005

By: 

Arthur S. Garrett  
Reg. No. 20,338

**Attachments:      Four Replacement Sheets  
                             FIGS. 1-4**